

Activity 2

The Coordinate System: Latitude and Longitude

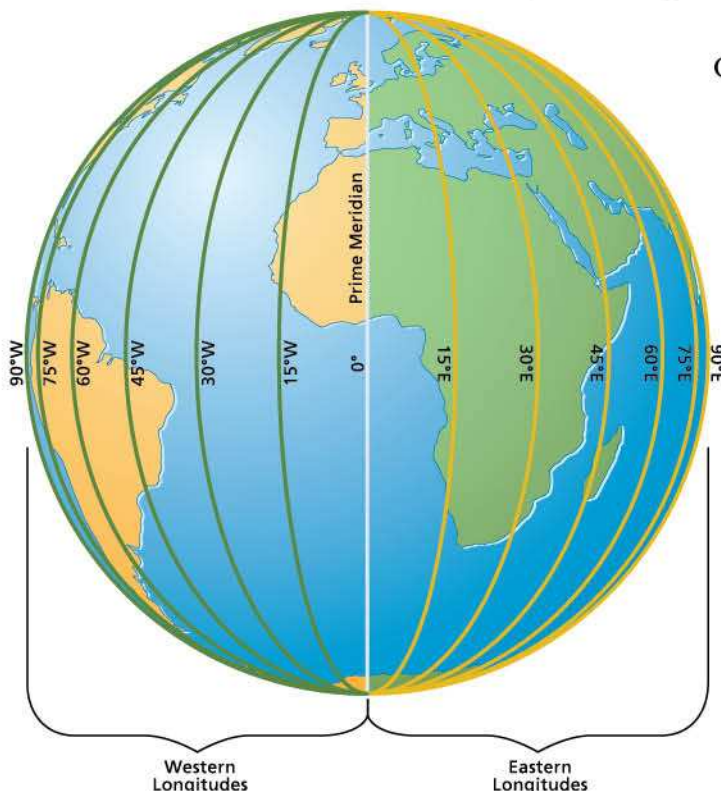
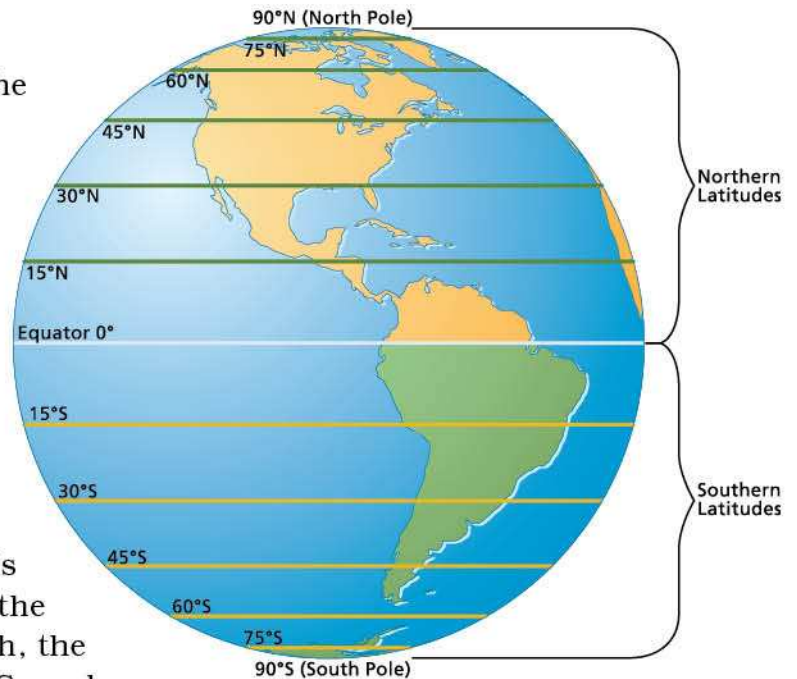


Key Words: latitude, Equator, longitude, meridians, prime meridian, coordinate system, coordinates, absolute location, hemispheres

On many maps and globes, you can see crisscrossing lines with numbers by them. These lines and numbers form a grid system that allows us to describe the exact location of any place on Earth.

The lines running east to west around the Earth are lines of **latitude**, also called *parallels* (because parallel lines do not touch each other). These lines use units of measure called degrees to measure the distance north or south of the **Equator**, which is 0° latitude. (The symbol ° stands for degrees.) The 30th parallel north is the same as 30° N (north) latitude.

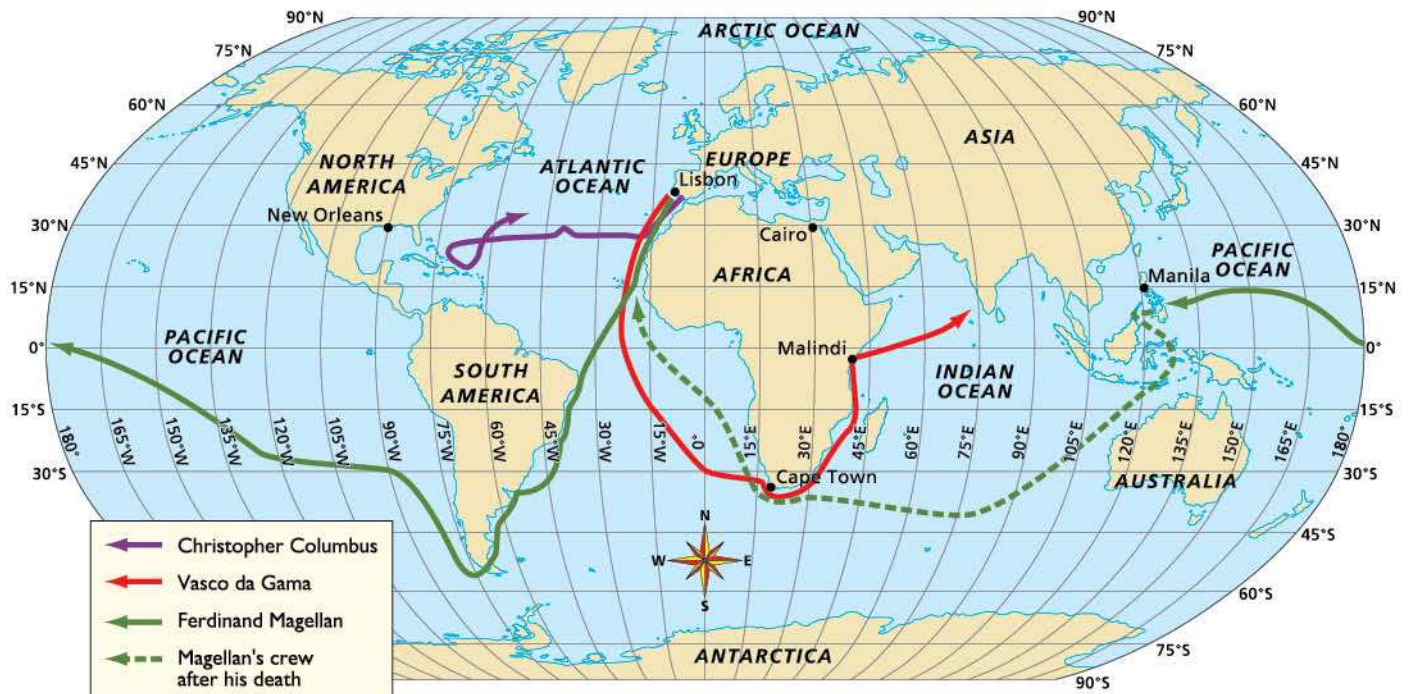
Look at the globe on the right. Locate the Equator at 0 degrees (0°). On this globe, the next line of latitude south of the equator is 15° S (south). Still going south, the next line of latitude is 30° S, then 45° S, and so on. The farthest south you can go is the South Pole, at latitude 90° S. The farthest north you can go is the North Pole, at latitude 90° N.



On a map or a globe the lines running north to south, from pole to pole are lines of **longitude**, also called *meridians*. Lines of longitude measure the distance east or west of the **prime meridian**, which is 0° longitude.

Look at the globe on the left. Find the prime meridian. On this globe, the first line of longitude east of the prime meridian is 15° E (east). The first line of longitude west of the prime meridian is 15° W (west). Unlike lines of latitude, lines of longitude eventually touch each other. Notice how the lines of longitude on the globe come together at the North Pole and the South Pole. At each of the poles, longitude equals 0°.

Together, lines of latitude and longitude form a grid system called the **coordinate system**. The latitude and longitude of a place make up the **coordinates** of that place. For example, on the world map below, the coordinates of the city of Cairo (in Africa) are 30° N, 31° E. When you state the coordinates of a place, you are describing its **absolute location**—its exact location on Earth. The absolute location of the city of New Orleans (in North America) is 30° N, 90° W.



When Columbus set sail from Spain in 1492, he did not know there were continents to the west between Europe and Asia. But he and the other explorers of his time did know the world was round, and they knew how to measure latitude. Latitude measurements told them how far north or south they had gone from where they started. Without those calculations, their risky journeys would have been even more dangerous.

The map above shows the routes of three historic explorers. Notice that the farthest east or west you can go is 180° ; in fact, 180° east and 180° west are the same line. This line of longitude cuts through the Pacific Ocean.

1. About how far south in latitude did Magellan go?
2. Who went farther south, Columbus or da Gama? About how far south in latitude did each explorer travel?
3. Which city along da Gama's route has an absolute location of 3° S, 40° E, Cape Town or Malindi?
4. Which city along Magellan's route has an absolute location of 38° N, 9° W, Manila or Lisbon?



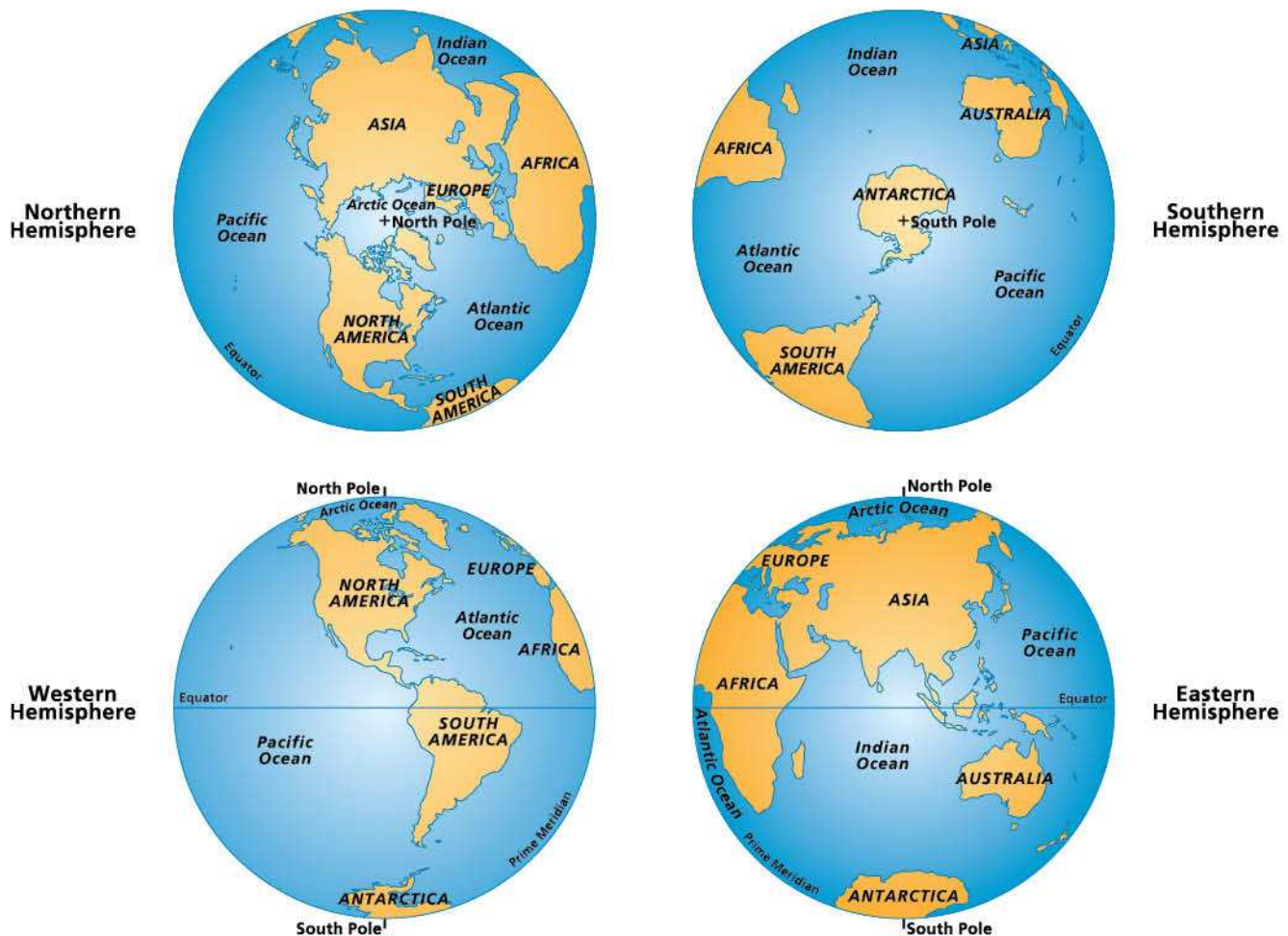
A replica of the Niña, one of Columbus's ships

Hemispheres

You remember that the Equator is 0° latitude, while the prime meridian is 0° longitude. The Equator and prime meridian divide the Earth into **hemispheres**. The prefix *hemi* comes from the Greek word for “half,” and a sphere, as you know, is a round object, like a globe.

The equator divides the globe into the Northern and Southern Hemispheres. The prime meridian divides the globe into the Eastern and Western Hemispheres. All places east of the prime meridian and west of the 180° longitude line are in the Eastern Hemisphere. All places west of the prime meridian and east of 180° are in the Western Hemisphere.

Every place on earth is in two hemispheres at once—either northern or southern, and either eastern or western. A large area such as a continent can span across many hemispheres. For example, as you can see below, Africa is in both the Northern and Southern Hemispheres. And, while most of Africa is in the Eastern Hemisphere, part of the continent is in the Western Hemisphere as well. So, Africa is in all four hemispheres.



Look at these pictures of the Earth's four hemispheres.

5. Which continents are in both the Northern and the Southern Hemispheres?
6. Which ocean is only in the Northern Hemisphere?
7. Is South America in the Eastern or the Western Hemisphere?
8. Which continents are located in the Northern and Eastern Hemispheres?

Use the map of Georgia to answer the following questions about latitude and longitude.

- Which city is near 33° N, 84° W, Macon or Albany?
- Which city is near 31° N, 83° W, Brunswick or Valdosta?
- Is the absolute location of Atlanta closer to 34° N, 84° W, or 33° N, 83° W?
- What is the absolute location of Savannah?
- About how far north and south does Georgia extend? Answer in degrees of latitude.
- About how far east and west does Georgia extend? Answer in degrees of longitude.
- Name two cities in Georgia located on the same line of longitude.



Skill Builder

Review

Use the map on page 9 to answer the following questions.

- True or False: Lines of latitude measure distance north or south of the Equator.
- True or False: Lines of longitude measure distance east or west of the prime meridian.
- Lines of latitude are also called _____. Lines of longitude are also called _____.
- In which two hemispheres is most of Asia located? In which two hemispheres is most of North America located?
- If you are standing at 51° N, 101° E, in which two hemispheres are you located?
- What is the absolute location of Cairo?
- What is another name for the 0° line of latitude? What is another name for the 0° line of longitude?
- On what continent would you find 38° N, 85° E?
- On what continent would you find 10° S, 72° W?
- On what continent would you find 28° S, 142° E?

Try It Yourself

Use the United States political map on pages 70-71 for the following activity.

A geography challenge: Give only the coordinates—the latitude and longitude—of one city on the map; ask a friend or parent to look at the map and identify the city. For example, you might ask, “What city is at 40° N, 75° W?”